

Study on CO₂/ N₂ separation: the effect of rubbery polymer coating on PVDF membrane

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Abstract. The emission of harmful gases such as carbon dioxide (CO₂) via gas processing plant and daily human activities gave negative impacts to the environment and global inhabitant. Flat sheet asymmetric membranes were produced from homogenous solution of Poly(vinylidene fluoride) (PVDF) via phase inversion method using N-methyl-2-pyrrolidone (NMP) as the solvent. While the poly ether b-amide (PEBAX) was dissolve by using of (70% ethanol and 30% water) as a solvent and and lithium chloride as a additives. The morphology and cross section of the produced membranes were observed by Scanning Electron Microscope (SEM). Then, the membranes were tested for chemical analysis to define the presence of PEBAX in the membrane by using Fourier Transform Infrared (FTIR) spectroscopy. The permeation performances of the membranes were evaluated in terms of permeability and selectivity of the membranes by using gas permeation test. Increasing the PEBAX content significantly increased the selectivity of the PVDF membrane to separate the CO₂/N₂ gases but decreased the amount of the gases that passed through the membrane.

